

REMARKS

Claims 1, 2, 6-13, 17-25, 29-34 and 38-41 are pending in this application, claims 24, 25, 29-34 and 38-40 having been withdrawn from consideration. By this Amendment, 1, 2, 9, 11, 13, 22, 24, 25, 32, 34 and 41 are amended, and claims 3-5, 14-16, 26-28 and 35-37 are canceled without prejudice to or disclaimer of the subject matter set forth therein. Support for the amendments to claims 1, 2, 9, 11, 13, 22, 24, 25, 32, 34 and 41 can be found in the specification as originally filed, for example in paragraphs [0023], [0024], [0026], [0056]-[0059], [0061]-[0063], and Figs. 4, 5A-5D; and in claims 1, 2, 9, 11, 13, 22, 24, 25, 32, 34 and 41 as originally filed. Thus, no new matter is added.

I. Rejection Under 35 U.S.C. §112

The Office Action rejects claims 1-23 and 41 under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. While Applicant does not necessarily agree with the rejection, Applicant respectfully submits that the amendments to claims 1, 9, 11, 22 and 41 clarify the subject matter set forth therein. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

II. Rejections Under 35 U.S.C. §102**A. U.S. Patent 6,136,289 to Szabo et al.**

The Office Action rejects claims 1, 6-8, 11, 12, 17-19, 22 and 23 under 35 U.S.C. §102(b) over U.S. Patent 6,136,289 to Szabo et al. Applicant respectfully traverses this rejection.

Independent claim 1 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst, comprising: a carrier consisting essentially of ferrierite, the carrier comprising pores having a pore diameter in a range of from 0.55 nanometers (nm) to 0.65 nanometers (nm); and a metal component supported on the carrier and which includes

platinum (Pt) and at least one type of transition metal, ... wherein the maximum allowable pore diameter of the carrier is 0.65 nanometers (nm); and wherein the transition metal is at least one type of metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir)." Independent claim 11 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst, comprising: a carrier whose maximum allowable pore diameter is 0.65 nanometers (nm), the carrier comprising pores having a pore diameter in a range of from 0.55 nanometers (nm) to 0.65 nanometers (nm); and a metal component supported on the carrier and which includes platinum (Pt) and at least one type of transition metal ... ; and wherein the transition metal is at least one type of metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir)."

Independent claim 22 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst ... , wherein the catalyst is provided with a metal component including platinum and at least one type of transition metal, ... wherein the carbon monoxide selective oxidizing catalyst is supported on a carrier having a maximum allowable pore diameter of 0.65 nanometers (nm), the carrier comprising pores having a pore diameter in a range of from 0.55 nanometers (nm) to 0.65 nanometers (nm); and wherein the transition metal is at least one type of metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir)." Claims 6-8, 12, 17-19 and 23 depend from claim 1, claim 11 or claim 22 and contain all of the limitations thereof.

In order to anticipate a claimed invention, the reference must disclose, in specific embodiments, all of the limitations of the claimed invention. That is, a prior art reference anticipates the claimed invention only where all claimed elements or steps of the claimed invention are disclosed, either expressly or inherently, in the reference. Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991); In re Marshall, 577 F.2d 301, 198 USPQ 344 (CCPA 1978). Szabo does not

disclose, in specific embodiments, each and every limitation of the independent claims 1, 11 or 22, or their dependent claims, and thus cannot anticipate claims 1, 11 or 22, or their dependent claims.

Szabo is cited as disclosing a catalyst composition including platinum loaded onto a ferrierite carrier and used for the conversion of hydrocarbons. The Szabo carrier allegedly has a pore size meeting the maximum pore diameter set forth in claims 1, 11 and/or 22.

However, Szabo does not disclose, in discrete embodiments, a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), as set forth in claims 1, 11, 22 and 41. Szabo discloses a hydrocarbon cracking catalyst comprising a platinum salt on a ferrierite carrier, but does not disclose any transition metal component to its catalyst. *See* Szabo, col. 2, lines 10-49. Thus, Szabo does not disclose, in embodiments, all of the features of claims 1, 11 or 22, or their dependent claims.

For at least these reasons, claims 1, 6-8, 11, 12, 17-19, 22 and 23 are patentable over Szabo. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

B. U.S. Patent 4,622,308 to Koikeda et al.

The Office Action rejects claims 1-23 under 35 U.S.C. §102(b) over U.S. Patent 4,622,308 to Koikeda et al. Applicant respectfully traverses this rejection.

Claims 1, 9, 11 and 22 are as set forth above. Independent claim 9 sets forth in pertinent part, “carbon monoxide concentration reduction apparatus, comprising: a hydrogen-rich gas supply ...; an oxygen supply ...; a carbon monoxide selective oxidizing catalyst comprising a carrier consisting essentially of ferrierite, the carrier comprising pores having a pore diameter in a range of from 0.55 nanometers (nm) to 0.65 nanometers (nm); and a metal

component supported on the carrier and which includes one of platinum (Pt) alone and platinum (Pt) and at least one type of transition metal, wherein ... a maximum allowable pore diameter of the carrier is 0.65 nanometers (nm); and a carbon monoxide selective oxidizing reactor.” Claims 2, 6-8, 10, 12, 13, 17-21 and 23 depend from claim 1, claim 9, claim 11 or claim 22 and contain all of the limitations thereof. Claims 3-5 and 14-16 have been canceled.

Koikeda is cited as disclosing a catalyst composition including iron and platinum loaded onto a ferrierite carrier and used for the production of hydrocarbons from synthesis gas. The Koikeda carrier allegedly has a pore size as set forth in claims 1, 9, 11 and 22.

However, Koikeda does not disclose, in discrete embodiments, a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), as set forth in claims 1, 9, 11 and 22. Instead, Koikeda discloses a hydrocarbon production catalyst comprising an iron salt and at least one of ruthenium, rhodium, platinum, palladium, iridium, cobalt and molybdenum, on a zeolite carrier. *See* Koikeda, Abstract; col. 3, lines 58-67. However, Koikeda does not disclose a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), that is, not including iron, as set forth in claims 1, 9, 11 and 22. Thus, Koikeda does not disclose, in embodiments, all of the features of claims 1, 9, 11 and 22, or their dependent claims.

For at least these reasons, claims 1, 2, 6-13 and 17-23 are patentable over Koikeda. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

C. U.S. Patent 5,955,395 to Andorf et al.

The Office Action rejects claims 11, 12, 17-20, 22, 23 and 41 under 35 U.S.C.

§102(b) over U.S. Patent 5,955,395 to Andorf et al. Applicant respectfully traverses this rejection.

Claims 11 and 22 are as set forth above. Claims 12, 17-20 and 23 depend from either claim 11 or claim 22 and contain all of the limitations thereof. Claim 41 sets forth, in pertinent part, a "carbon monoxide selective oxidizing catalyst, comprising: a carrier consisting essentially of one of ferrierite and ZSM-5; and a metal component supported on the carrier and which includes platinum (Pt) and at least one type of transition metal, ... wherein the maximum allowable pore diameter of the carrier is 0.54 nanometers (nm); and wherein the transition metal is at least one type of metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir)."

Andorf is cited as disclosing a catalyst composition including platinum loaded onto a zeolite carrier such as ZSM-5 and used for the selective conversion of carbon monoxide from a hydrogen-rich gas stream. The Andorf carrier allegedly has a pore size meeting the maximum pore diameter set forth in claims 11, 22 and/or 41.

However, Andorf does not disclose, in discrete embodiments, a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), as set forth in claims 11, 22 and 41. Instead, Andorf discloses a hydrocarbon production catalyst comprising platinum and, optionally, sodium on a zeolite carrier. *See* Andorf, Abstract. However, Andorf does not disclose a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), that is, a catalyst that does not include iron, as set forth in

claims 11, 22 and 41. Thus, Andorf does not disclose, in embodiments, all of the features of claims 11, 22 and 41, or their dependent claims.

For at least these reasons, claims 11, 12, 17-20, 22, 23 and 41 are patentable over Andorf. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

III. Rejections Under 35 U.S.C. §103

The Office Action rejects claims 11, 12, 17-23 and 41 under 35 U.S.C. §103(a) over EP 0 833 401 A2 to Aoyama in view of Andorf. Applicant respectfully traverses this rejection.

Claims 11, 22 and 41 are set forth above. Claims 12 and 17-21 and 23 depend from either claim 11 or claim 22 and contain all of the limitations thereof.

Aoyama is cited as allegedly disclosing a reforming reactor for reducing carbon monoxide including a catalyst composition that includes platinum on a zeolite carrier and is used for the selective conversion of carbon monoxide from a hydrogen-rich gas stream. The Office Action admits that Aoyama does not disclose or suggest the specific zeolite carriers, and relies on Andorf for its teaching of a ZSM-5 zeolite carrier.

However, neither Aoyama nor Andorf discloses or suggests a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), as set forth in claims 11, 22 and 41. As discussed above, Andorf does not teach or suggest a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir). Similarly, Aoyama does not disclose or suggest a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition

metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir). Thus, Aoyama, alone or in combination with Andorf, does not disclose or suggest a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), as set forth in claims 11, 22 and 41.

For at least these reasons, claims 11, 12 and 17-23 and 41 are patentable over Aoyama in view of Andorf. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

IV. Rejections Under 35 U.S.C. §102/§103

The Office Action rejects claims 11-19, 22, 23 and 41 under 35 U.S.C. §102(b), or in the alternative, under 35 U.S.C. §103(a) over JP A 6-198192. Applicant respectfully traverses this rejection.

Claims 11, 22 and 41 are as set forth above. Claims 12-19 and 23 depend from either claim 11 or claim 22 and contain all of the limitations thereof.

JP A 6-198192 is cited as allegedly disclosing a catalyst composition including platinum and iron loaded onto a zeolite carrier such as ZSM-5 and used for the selective conversion of carbon monoxide from a hydrogen-rich gas stream. The JP A 6-198192 carrier allegedly has a pore size meeting the maximum pore diameter set forth in claims 11, 22 or 41.

However, JP A 6-198192 does not disclose, in discrete embodiments, a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), as set forth in claims 11, 22 and 41. Instead, JP A 6-198192 discloses a hydrocarbon production catalyst comprising iron and platinum, on a zeolite carrier. *See* JP A 6-198192, Abstract; col. 3, lines 58-67. However, JP A 6-198192

does not disclose a carbon monoxide selective oxidizing catalyst that comprises a metal component including platinum and at least one transition metal selected from the group consisting of cobalt (Co), manganese (Mn), chromium (Cr), and iridium (Ir), that is, not including iron, as set forth in claims 11, 22 and 41. Thus, JP A 6-198192 does not disclose, in embodiments, all of the features of claims 11, 22 or 41, or their dependent claims.

For at least these reasons, claims 11-19, 22, 23 and 41 are patentable over JP A 6-198192. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

V. Allowable Subject Matter

Applicants thanks the Examiner for the indication that claims 9 and 10 would be allowable if the rejection under 35 U.S.C. §112, second paragraph, is overcome. By this Amendment, claim 9 has been rewritten in independent form, including all of the limitations of claim 1 at the time of the Office Action. Because the rejection under §112 is overcome for the reasons described with respect to the rejection of claim 1 under §112, claims 9 and 10 are in condition for allowance.

VI. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 6-13, 17-25, 29-34 and 41 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: December 10, 2004

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